

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently amended) A method for enabling combustion-assisted engine starting in a variable displacement engine, comprising:

adjusting a throttle valve to provide an air flow rate to an engine of a vehicle that is sufficient to create starting torque;

injecting fuel that is sufficient to create said starting torque into a selected cylinder of said engine during an intake stroke of said cylinder;

disabling a spark plug of said selected cylinder;

disabling an intake and exhaust valve of to trap said fuel in said selected cylinder ~~in~~ while said variable displacement engine continues to run; and

deactivating said variable displacement engine after disabling the spark plug and the intake and exhaust valves of said selected cylinder.

2. (Previously presented) The method of Claim 1 further comprising:
enabling at least one additional cylinder of said variable displacement engine for combustion-assisted starting before said deactivating step.

3. (Previously presented) The method of Claim 1 wherein said throttle valve adjusts a Manifold Absolute Pressure (MAP) of an intake manifold in said variable displacement engine.

4. (Original) The method of Claim 1 wherein an Electronic Throttle Control (ETC) adjusts said throttle valve.

5. (Previously presented) The method of Claim 1 wherein said variable displacement engine is one of a multi-port fuel injected spark-ignition engine and a direct-injection spark-ignition engine.

6. (Currently amended) A method for activating a variable displacement engine enabled for combustion-assisted starting, wherein intake and exhaust valves of one or more selected cylinders in said engine are deactivated at low load operating conditions to increase fuel economy and spark plugs of said one or more selected cylinders are disabled to trap a fuel/air charge in said selected cylinders while said engine continues to run, comprising:

enabling said spark plugs;

igniting ~~[[a]]~~ said fuel/air charge, ~~that is~~ wherein said fuel/air charge is sufficient to create starting torque in at least one of said one or more selected cylinders.

7. (Currently amended) The method of Claim 6 wherein a piston of said at least one of said one or more selected cylinders is positioned between a Top Dead Center (TDC) position of a compression stroke and a Bottom Dead Center (BDC) position of an expansion stroke before said igniting step.

8. (Currently amended) The method of Claim 6 wherein a piston of said at least one of said one or more selected cylinders is positioned between a TDC position of an exhaust stroke and a BDC position of an intake stroke before said igniting step.

9. (Currently amended) The method of Claim 6 further comprising:
activating an intake and exhaust valve of said at least one of said one or more selected cylinders after said igniting step.

10. (Original) The method of Claim 6 wherein said engine is one of a multi-port fuel injected spark-ignition engine and a direct-injection spark-ignition engine.

11. (Previously presented) The method of Claim 6 wherein fuel/air charges in a plurality of cylinders in said variable displacement engine are ignited in said igniting step.

12. (Currently amended) A combustion-assisted engine start/stop system for a variable displacement engine, comprising:

an Electronic Throttle Control (ETC) that adjusts a position of a throttle valve in a vehicle;

a fuel injection system that injects fuel into a plurality of cylinders of said variable displacement engine based on said position;

an ignition system that is capable of disabling a spark plug in ~~at least a~~ selected one of said plurality of cylinders;

a valvetrain system that is capable of disabling an intake and exhaust valve in said ~~at least~~ selected one of said plurality of cylinders and to substantially prevent air flow in said ~~at least~~ selected one of said plurality of cylinders; and

a controller that communicates with said ETC, said ignition system, and said valvetrain system, wherein combustion-assisted engine starting is enabled by containing a fuel/air charge sufficient for starting torque in said ~~at least~~ selected one of said plurality of cylinders when said spark plug and said intake and exhaust valve are disabled while said variable displacement engine continues to run.

13. (Previously presented) The combustion-assisted engine start/stop system of Claim 12 wherein all of said plurality of cylinders contain fuel/air charges sufficient for starting torque after a shutdown process of said variable displacement engine.

14. (Previously presented) The combustion-assisted engine start/stop system of Claim 12 wherein an activation process of said variable displacement engine ignites a plurality of cylinders in said variable displacement engine.

15. (Original) The combustion-assisted engine start/stop system of Claim 12 wherein said position adjusts a Manifold Absolute Pressure (MAP) of said engine.

16. (Previously presented) The combustion-assisted engine start/stop system of Claim 12 wherein said variable displacement engine is one of a multi-port fuel injected spark-ignition engine and a direct-injection spark-ignition engine.

17. (Currently amended) A method of operating a variable displacement engine comprising:

sensing a low load condition on said variable displacement engine;

deactivating at least one selected cylinder of said variable displacement engine to substantially prevent air flow through said at least one selected cylinder in response to said low load condition;

injecting fuel into said at least one selected cylinder while said at least one selected cylinder is deactivated;

operating said variable displacement engine in a partially displaced operating mode with said fuel in said at least one selected cylinder while air is substantially prevented from flowing through the at least one selected cylinder; and

igniting the fuel in said at least one selected cylinder to operate[[d]] said variable displacement engine in a fully displaced mode.